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METHOD AND APPARATUS FOR ECONOMICAL DRIFT COMPENSATION IN HIGH RESOLUTION MEASUREMENTS

ABSTRACT OF THE DISCLOSURE

A system for measuring differences in a physical variable, such as temperature or voltage, by utilizing predictable behavior in the relative drift over time of reference curves representative of offset, and other measurement parameters for various circuit elements. In an initial calibration mode, the system records several reference curves, correlating ambient condition to offset, and, optionally, other parameter measurements acquired from circuit elements. These reference curves representing drift behavior, among electrical components, can be updated for time drift at a single, current arbitrary ambient temperature, the measurements for which can be obtained quickly and applied as a time drift correction to the reference curves, without interrupting normal system operation, to provide a compensated difference measurement between the different values of the physical variable. Additionally, the system dynamically tracks cumulative system errors, in order to calculate optimal system resolution, based upon current operating conditions.